ZEMTSOV, Stanislav Markovich; IVANOV, V.N., redaktor; IGNATKIN, I.A., nauchnyy redaktor; AGRANOVSKIY, Ye.A., tekhnicheskiy redaktor

[Lvov] L'vov. Moskva. Gos.izd-vo lit-ry po stroit.i arkhit., 1956. 116p. (MLRA 10:5)

(Lvov--Description)

ZEMTSOV, S. M.

Pavlovsk. Moskva, Ize-vo Akademii arkhitektury SSSR, 1947. 46 p. (Sokrovishcha russkogo zodchestva) (52-36828)

NA1197.P3Z4

1. Architecture - Pavlovsk, Russia. 2. Pavlovsk, Russia - Descr. - Views.

ZEMTSOV, V.L., inzh.

Change in the pipe sealing system in VVN-type 110 kv. switches.
Elek. sta. 31 no.12:80-81 D '60. (MIRA 14:5)
(Electric switchgear)

ZEMTSOV, V.L., inzh.

Redesigning of the glands of air blowing pipes of air switches.
Elek. sta. 34 no.1:84-85 Ja '63. (MIRA 16:2)
(Electric switchgear)

TOLOCHKOV, Aleksey Aleksandrovich, prof., doktor tekhn.nauk; ZEMTSOV, V.M., dotsent, kand.tekhn.nauk, retsenzent; YANOVSKIY, I.L., inzh., red.; VINOGRADSKAYA, S.I., izdat.red.; ROZHIN, V.P., tekhn.red.

[Theory of gun mounts for artillery units] Teoriia lafetov artilleriiskikh ustanovok. Moskva, Gos.nauchno-tekhn.izd-vo Oborongiz, 1960. 344 p. (MIRA 13:7)
(Russia--Army--Artillery)

ZEMTSOV, Ye.Ye.

Some possibilities of the statistical processing of the kinematic parameters of reflected waves. Razved. geofiz. no.5:3-14 '65. (MIRA 18:9)

ZEMTSOV, Ye.Ye.

Reflecting capacity of water-oil and water-gas contacts of some fields in Krasnodar Territory. Razved. i prom. geofiz. no.46:3-6 '62. (MIRA 16:3)

(Krasnodar Territory—Seismic prospecting)

ZEMTSOV, Yu. K.; PIS'MENNYY V. D.; PODGORNYY, I. M.

Electron temperature in a high-power impulsive discharge.
Dokl. AN SSSR 155 no. 2:312-315 Mr '64. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet. Predstavleno akademikom L. A. Artsimovichem.

GVOZDETSKIY, N.A., prof.; ZHUCHKOVA, V.K., dots.; ALISOV, B.P., prof.; VASIL'YEVA, I.V., dots.; VARLAMOVA, M.N., tekhnik-kartograf; DOLGOVA, L.S., dots.; ZVORYKIN, K.V., st. nauchnyy sotr.; ZEMTSOVA, A.I., assistent; IVANOVA, T.N.; LEBEDEV, N.P., st. prepodavatel'; LYUBUSHKINA, S.G.; NESMEYANOVA, G.Ya., mlad. nauchnyy sotr.; PASHKANG, K.V., st. prepod.; POLTARAUS, B.V., dots.; RYCHAGOV, G.I., st. prepod.; SPIRIDONOV, A.I., dots.; SMIRNOVA, Ye.D., mlad. nauchnyy sotr.; SOLNTSEV, N.A., dots.; FEDOROVA, I.S., mlad. nauchnyy sotr.; TSESEL'CHUK, Yu.N., mlad. nauchnyy sotr.; SHOST'INA, A.A., mlad. nauchnyy sotr.; Prinimali uchastiye: BELOUSOVA, N.I.; GOLOVINA, N.N.; KALASHNIKOVA, V.I.; KOZLOVA, L.V.; KARTASHOVA, T.N.; PAN'KOVA, L.I.; URKIKHO, V.; PETROVA, K.A., red.; LOPATINA, L.I., red.; YERMAKOV, M.S., tekhn. red.

[Physicogeographical regionalization of the non-Chernozem center] Fiziko-geograficheskoe raionirovanie nechernozemnogo tsentra. Pod red. N.A.Gvozdetskogo i V.K.Zhuchkovoi. Moskva, Izd-vo Mosk. univ., 1963. 450 p. (MIRA 16:5)
(Physical geography)

ZEMTSOVA, E.V.; KRISS, A.Ye.

Survival of marine micro-organisms (heterotrophs) during cultivation under laboratory conditions. Dokl. AN SSSR 142 no.3:695-698 Ja '62. (MIRA 15:1)

1. Institut mekrobiologii AN SSSR. Predstavleno akademikom A. I. Oparinym.

(SEA WATER--MICROBIOLOGY)
(BACTERIOLOGY--CULTURES AND CULTURE MEDIA)

TIKHONENKO, T.I.; VINETSKIY, Yu.P.; ZEMTSOVA, E.V.

Method for obtaining phage lysates of Escherichia coli Sd with high initial titers. Mikrobiologiia 30 no.6:1020-1022 N-D '61. (MIRA 14:12)

1. Institut radiatsionnoy i fiziko-khimicheskoy biologii AN SSSR.
(ESCHERICHIA COLI) (BACTERIOPHAGE)

KRISS, A.Ye.; MISHUSTINA, I.Ye.; MITSKEVICH, I.N.; ZEMTSOVA, E.V.; IMSHENETSKIY, A.A., akademik, otv. red.; GOL'DIN, M.I., red.izd-va; GUSEVA, A.P., tekhn. red.; KISELEVA, A.A., tekhn. red.

[Microbial population of the Pacific Ocean; species and geographical distribution] Mikrobnoe naselenie mirovogo okeana; vidovoi sostav, geograficheskoe rasprostranenie. Moskva, Izd-vo "Nauka," 1964. 295 p. (MIRA 17:1)

TIKHONENKO, T.I.; VELIKODVORSKAYA, G.A.; ZEMTSOVA, E.V.

Chemical and biological properties of c_d bacteriophage. Biokhimiia 27 no.4:726-733 Jl-Ag '62. (MIRA 15:11)

1. Institute of Radiation and Physico-Chemical Biology, Academy of Sciences of the U.S.S.R., and Institute of Microbiology and Epidemiology, Academy of Medical Sciences of the U.S.S.R., Moscow.
(BACTERIOPHAGE)

ZEMTSOVA, N. A. (USSR)

"Effect of Adrenocorticotropic Hormone of the Pituitary on the Cocarboxylase and Codehydrogenase I Level Blood."

Report presented at the 5th International Biochemistry Congress, Moscow, 10-16 Aug 1961

USSR/Human and Animal Physiology (Normal and Pathological) T
Metabolism. Vitamins.

Abs Jour : Ref Zhur Biol., No 6, 1959, 26297

Author : Zentsova, N.A.

Inst : Lvov Scientific Research Institute

Title : The Influence of the Adrenocorticotrophic Hormone of the Hypophysis on the Content of D-Group Vitamins in the Blood of Animals.

Orig Pub : Nauchn. tr. L'vovsk. n.-i. in-t okhrany materinstva i detstva, 1957, 2, 58-62

Abstract : Intramuscular introduction to adult dogs of 2 units of ACTH per 1 kg of weight once, or daily for the duration of 21 days, led to a decrease in the blood of free vitamin D_1 and its phosphorylic form (cocarboxylase), in the former case (in gamma %) to 3 (normal 5) and 45

Card 1/2

USSR/Human and Animal Physiology (Normal and Pathological) T
Metabolism. Vitamins.

Abs Jour : Ref Zhur Biol., No 6, 1959, 26297

(normal 170), in the latter case to 0 and 11.2. The content of DPN in the blood of dogs did not change after administration of 2 units of ACTH per 1 kg. and decreased temporarily (in the course of 3 hours) after introduction of 6 units per 1 kg. The introduction of 6 units per 1 kg of ACTH to 45-day old pups led after 30 minutes to a change of DPN concentration in the blood; however, no clear regularity in the character of changes was established.

Card 2/2

GZHITSKIY, S.Z.[Hzhyts'kyi, S.Z.]; ZEMTSOVA, N.A.[Zemtsova, N.O.]; GOLOVATSKIY, I.D.[Holovats'kyi, I.D.]; PALFIY, F.Yu.

Biochemical investigations of cow blood in connection with milk yields and parturient paralysis. Pratsi Inst. agrobiol. AN URSR 3 no. 2:25-38 '56. (MIRA 11:7)

(Cows--Diseases and pests)
(Blood--Analysis and chemistry)

ZEMTSOVA, N. M.

Zemtsova, N. M. - "The dynamics of feed provision and the chemism of semidesert pasture plants," Byulleten' Mosk. o-va ispytateley prirody, Otd. biol., 1948, Issue 6, p. 81-91 --- Bibliog: 9 items

So: U-3566, 15 March 53, (Letopis 'Zhurnal 'nykh Statey, No. 13, 1949)

BUGROVA, V.I., kand. med. nauk; VINOGRADOVA, I.N., kand.biol. nauk; D'YAKOV, S.I., kand. med. nauk; ZHDANOV, V.M., prof.; ZHUKOV-VEREZHNIKOV, N.N., prof.; ZEMTSOVA, O.M., kand. med. nauk; IMSHENETSKIY, A.A., prof.; KALINA, G.P., prof.; KAULEN, D.R., kand. med. nauk; KOVALEVA, A.I., doktor med. nauk; KRASIL'NIKOV, N.A., prof.; KUDLAY, D.G., doktor biol. nauk; LEBEDEVA, M.N., prof.; PERETS, L.G., prof. [deceased]; PEKHOV, A.P., doktor biol. nauk; PLANEL'YES, Kh.Kh., prof.; POGLAZOVA, M.N., kand. biol. nauk; PROZOROV, A.A.; SINITSKIY, A.A., prof.; FEDOROV, M.V., prof. [deceased]; SHANINA-VAGINA, V.I., kand.biol. nauk; VYGODCHIKOV, G.V., prof., zamestitel' otv. red.; ADO, A.D., prof., red.; BAROYAN, O.A., prof., red.; BILIBIN, A.F., prof., red.; BOLDYREV, T.Ye., prof., red.; VASHKOV, V.I., doktor med. nauk, red.; VYAZOV, O.Ye., doktor med. nauk, red.; GAUZE, G.F., prof., red.; GOSTEV, V.S., prof., red.; GORIZONTOV, P.D., prof., red.; GRINBAUM, F.T., prof., red. [deceased]; GROMASHEVSKIY, L.V., prof., red.; YELKIN, I.I., prof., red.; ZASUKHIN, L.N., doktor biol. nauk, red.; ZDRODOVSKIY, P.F., prof., red.; KAPICHNIKOV, M.M., kand. med. nauk, red.; KLEMPARSKAYA, N.N., prof., red.; KOSYAKOV, P.N., prof., red.; LOZOVSKAYA, Ye.S., kand. med. nauk, red.; MAYSKIY, I.N., prof., red.; MUROMTSEV, S.N., prof., red. [deceased];

(Continued on next card)

APPROVED FOR RELEASE: 07/19/2001 CIA-RDP86-00513R001964420015-9"

BUGROVA, V.I.---(continued) Card 2.
NIKITIN, M.Ya., red.; NIKOLAYEVA, T.A., red.; PAVLOVSKIY, Ye.N., akademik, red.; PASTUKHOV, A.P., kand. med. nauk, red.; PETRISHCHEVA, P.A., prof., red.; POKROVSKAYA, M.P., prof., red.; POPOV, I.S., kand. med. nauk, red.; ROGOZIN, I.I., prof. red.; RUDNEV, G.P., prof., red.; SERGIYEV, P.G., prof., red.; SKRYABIN, K.I., akad., red.; SOKOLOV, M.I., prof. red.; SOLOV'YEV, V.D., prof., red.; TRIBULEV, G.P., dotsent, red.; CHUMAKOV, M.P., prof., red.; SHATROV, I.I., prof., red.; TIMAKOV, V.D., prof., red.toma; TROITSKIY, V.L., prof., red. toma; PETROVA, N.K., tekhn.red.;

[Multivolume manual on the microbiology, clinical aspects, and epidemiology of infectious diseases] Mnogotomnoe rukovodstvo po mikrobiologii klinike i epidemiologii infektsionnykh boleznei. Otv. red. N.N.Zhukov-Verezhnikov. Moskva, Medgiz. Vol.1. [General microbiology] Obshchaia mikrobiologiia. Otv. red. N.N.Zhukov-Verezhnikov. 1962. 730 p. (MIRA 15:4)

1. Deystvitel'nyy chlen Akademii meditsinskikh nauk SSSR (for Zhdanov, Zhukov-Verezhnikov, Vygodchikov, Bilibin, Vashkov, Gromashevskiy, Zdrodovskiy, Rudnev, Sergiyev, Chumakov, Timakov, Troitskiy).

(Continued on next card)

BUGROVA, V.I.---(continued) Card 3.

2. Chlen-korrespondent Akademii nauk SSSR (for Imshonetskiy, Krasil'nikov). 3. Chlen-korrespondent Akademii meditsinskikh nauk SSSR (for Planel'yes, Baroyan, Boldyrev, Gorizontov, Petrishcheva, Rogozin). 4. Deystvitel'nyy chlen Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk im. V.I.Lenina (for Muromtsev).

(MICROBIOLOGY)

ZEMTSOVA, N. N.

"The Dynamics of a Feed Reserve and the Chemical Affinity of Semi-arid Pasture Land Plants," Byul. Mosk. Obshch. Ispytat. Prirody, Otdel Biol., 53, No. 6, 1948.

GONCHAROV, V. S., ZEMTSOVA, M. M., KULIK, N. F., SEPEROVICH, I. P.

Afforestation - Caspian Sea Region

Forestry on unirrigated soils in the northern Caspian Sea region. Les. khoz. 5 no. 9, 1952

Monthly List of Russian Accessions, Library of Congress November 1952 UNCLASSIFIED

GONCHAROV, V. S., ZEMTSOVA, N. M., KULIK, N. F., SEPEROVICH, I. F.

Caspian Sea Region - Afforestation

Forestry on unirrigated soils in the northern Caspian Sea region. Les. khoz. 5 no. 9, 1952.

Monthly List of Russian Accessions. Library of Congress November 1952. UNCLASSIFIED

ZEMTSOVA, O.M.; OSIPOVSKIY, A.I.

Observation on an epizootic paratyphoid infection in the progeny of irradiated rats. Med.rad. 5 no.6:47-51 '60. (MIRA 13:12)
(PARATYPHOID FEVER) (RADIATION—PHYSIOLOGICAL EFFECT)

KORYAKIN, V.I.; VODOLAZOV, P.N.; Prinimali uchastiye BULANOV, V.A.; ZEMTSOVA, V.F.; IL'INA, Ye.I.

Industrial experiments in the production of furfural by pyrolysis. Gidroliz. i lesokhim. prom. 14 no. 1:9-12 '61. (MIRA 14:1)

1. TSentral'nyy nauchno-issledovatel'skiy lesokhimicheskiy institut.

(Furaldehyde) (Pyrolysis)

USSR/General Biology. Individual Development B

Abs Jour : Ref Zhur-Biol., No 13, 1958, 57142

Author : Zemtsova Z. D.
Inst : Not Given
Title : Histological Characteristics of the Extraembryonic Ectoderm in the Early Stages of the Development of the Chicken Embryo.

Orig Pub : Arkhiv anatomii, gistol. i embrologii, 1956, 33, No 4, 61-68

Abstract : Sectional and total preparation in the formation ofextraembryonic ectoderm in 110 chickens embryos before incubation, and in stages of 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 40, and 72 hours of incubation as well as the structure of the epithelium of the chorio-allantoin of an 8 day old embryo were studied. The single

Card 1/2

USSR/General Biology. Individual Development B

Abs Jour : Ref Zhur-Biol., No 13, 1958, 57142

Abstract : layer ectoderm is formed from cells which are not separated from other strata (layers). At the moment the egg is laid the cells of the extraembryonic ectoderm take on an epithelium like prismatic form. The form and the dimension of the cells of the central and peripheral parts of the blastodisc are not equal. From the beginning of incubation high prismatic cells of the embryonic part are formed in the center of the blastodisc, while the extraembryonic cells are depressed. Thirty hours after incubation two to three nuclei cells and mitoses are found in the extraembryonic part. Slitlike spaces are found in the epithelium of the chorioallantoin of 3 day old embryos. The author thinks that the extraembryonic ectoderm is a food tissue and takes part in the gas metabolism of the embryo with the surrounding medium.

Card 2/2

ZEMTSOVA, Z.D. (Leningrad, 14, ul.Zhukovskogo, d.38, kv.31)

Histological peculiarits of the extraembryonal ectoderm in the early stages of development of a chick embryo. Arkh.anat.gist. i embr. 33 no.4:61-68 O-D '56. (MIRA 10:4)

1. Iz kafedry gistologii s embriologiyey (nachal'nik - deystvitel'nyy chlen AMN SSSR professor N.G.Khlopin) Voyenno-meditsinskoy ordena Lenina akademii im. S.M.Kirova

(ECTODERM, embryol.
extraebryonic, histol peculiarities in early stages of growth of chick embryo)
(EMBRYO
extraembryonic ectoderm of chick embryo, histol. peculiarities in early stages of growth)

BEKHTINA, V.G. (g. Pushkin, Moskovskoye shosse, 2,kv.18); ZEMTSOVA, Z.D. (Leningrad, K-100, Kantemirovskaya ul.,28,kv.22)

"Development of the embryo of the domestic chicken and its correlation with the yolk and membranes of the egg (with tables of the consecutive stages in its development)" by M.N.Ragozina. Reviewed by V.G.Bekhtina and Z.D.Zemtsova. Arkh. anat. gist. i embr. 42 no.1:117-120 Ja '62. (MIRA 15:4)

(POULTRY) (EMBRYOLOGY--GALLINAE)

ZEMTSOVSKAYA, Vera Ivanovna; MIKHLIN, Ye.I., red.

[Statistics of labor productivity; a textbook] Statistika proizvoditel'nosti truda; uchebnoe posobie. Leningrad, Izd-vo Leningr. univ., 1964. 53 p.
(MIRA 17:8)

ZEMTSOVSKIY, B.M., inzh.; FROLOV, P.V., inzh.

"Fuel-air" regulator equipped with a "steam-fuel" adjuster. Elek. sta. 30 no.2:8-10 F '59. (MIRA 12:3)
(Governors (Machinery))

ZEMTSOVSKIY, V.B.; SOROKIN, F.P.

Lathe attachment for turning the armature of electric traction motor collectors. Rats. predl. na gor. elektrotransp. no.9: 27-28 '64. (MIRA 18:2)

1. Depo No.1 Tramvayno-trolleybusnogo upravleniya Leningrada.

ZEMTZOVA, M. I.; KULAGIN, Yu. A.; NOVIKOVA, L. A.

"The Use of the Safe Analyzers in Compensation of Visual Function in Blindness"

1. Institute of Defectology, Acad. of Pedagogical Sci. RSFSR.

To be presented at the International Congress on Technology and Blindness, New York, 18-22 June 1962.

ZEMVA, M.

Microtechnic for determination of agglutinogens and agglutinis in ABO blood groups. Zdrav. vest., Ljubljana 24 no.5-6:214-216 1955.

1. Zavod za transfuzijo krvi v Ljubljani--pred. dr. Sonja Sovdat.
(BLOOD GROUPS,
ABO, determ. of agglutinogens & agglutinis (Sl))
(HEMAGGLUTINATION,
agglutinin & agglutinogen determ. in ABO groups,
microtechnic (Sl))

ZEMVA, Miha

Micromethod for determination of hematocrit readings. Zdrav. vest., Ljubljana 24 no.7-8:241-243 1955.

1. Poliklinika v Ljubljani-predstojnik Dr. Drago Music.
(BLOOD CELLS,
hematocrit, improved micromethod (Sl))

ZEMVA, Mimica

Glucuronic acid in the blood serum and urine. Zdrav. vestn. 33 no.10:317-319 '64.

1. Infekcijska klinika medicinske fakultete v Ljubljani (Predstojnik: prof. dr. M. Bedjanic).

ZEMVA, Miha, dr.

Hematologic studies of liver diseases. Farmacevt vest 14 no.10/12:222-227 '63.

KAVALAR, Anica, mr.; KROMAR, Janez, mr.; NUCIC, C., dr.; ZEMVA, Mimica, mr.; KARBA, Dusan, mr.; BOHINC, Pavle, mr.

Book reviews. Farmacevt vest 14 no.10/12:251-259 '63.

PERSHIN, A.A., kand.med.nauk; ZEMYACHKOVSKIY, I.G., arkhitektor

New city satellite of Moscow. Gig. i san. 25 no. 6:15-20 Je '60.
(MIRA 14:2)

1. Iz Instituta obshchey i kommunal'noy gigiyeny imeni A.N. Sysina AMN SSSR i masterskoy No. 14 Instituta "Mosproyekt."
(MOSCOW REGION--CITY PLANNING)

2 ZEMYANKEVICH, M.M.

137-58-5-11204

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 329 (USSR)

AUTHORS: Kadanov, R.Z., Zemyankevich, M.M.

TITLE: Electrometric Determination of Silver (Elektrometricheskoye opredeleniye serebra)

PERIODICAL: Radiotekhn. proiz-vo, 1957, Nr 8, pp 17-19

ABSTRACT: An electrometric method was adapted at the VEF plant making it possible to determine the content of Ag in Ag-plated components made of nonferrous metal; the method is equally suitable for the analysis of alloys and solutions. The Ag-coated part is dissolved in HNO_3 and the resulting solution, containing ≥ 0.01 g of Ag, is titrated with NaCL under constant stirring. The end of the titration is determined with the aid of an electrode pair, and the point of zero potential difference is identified by a galvanometer with a ±50-amp dial, each graduation on which is equal to 0.5×10^{-6} amp. A constant resistance is supplied by a 10,000-20,000 ohm resistor box. The indicating electrode consists of an amalgamated Ag wire 80-100 mm long and 0.8-1.5 mm in diameter. The standard electrode consists of an identical Ag wire immersed into a paste made of Ag_2CrO_4 and agar-agar;

Card 1/2

137-58-5-11204

Electrometric Determination of Silver

gel; the latter serves as the contact. The process of determination requires 5-10 minutes.

1. Silver--Determination 2. Silver plating--Applications

N.G.

Card 2/2

ZEMYANSKIY, V. A., Cand of Tech Sci -- (diss) "Investigation of the process of grinding wood shavings at a saw mill with a wood-shaving-crusher." Moscow, 1957, 10 pp (Moscow Aviation Technological Institute), 125 copi es (KL, 35-57, 107)

ZEMYLANSKIY, N.N.; PANOV, Ye.M.; KOCHESHKOV, K.A.

Dialkyltin. Dokl. AN SSSR 146 no.6:1335-1336 O '62.

(MIRA 15:10)

1. Fiziko-khimicheskiy institut im. L.Ya.Karpova. 2. Chlen-korrespondent AN SSSR (for Kocheshkov).
(Tin)

ZEMZARE, D.

GENERAL

PERIODICALS: VESTIS No. 3, 1958

ZEMZARE, D. First research of Academician Janis Endzelins about Slavicisms in the Latvian language. p. 25

Monthly list of East European Accessions (EEAI) LC, Vol. 8, No. 2, February 1959, Unclass.

CA

29

Thermostable insole leather for hot vulcanized footwear. N. B. Bradetskii, T. P. Zeimzer, and I. G. Maslov. *Legkaya Prom.* 11, No. 7, 28-9(1951).—Soaking, liming, pickling, and chroming procedures are as usual. Three-stage vegetable retanning is employed, with one of the following compns.: oak 80 + AN 20, oak 60 + AN 20 + PL 20, oak 30 + spruce 30 + AN 20 + PL 20%. Chrome content in leather was kept at 1.5-1.7% (for 0.0 moisture). AN and PL are syntans.

B. Z. Kamich

L 23594-66 EWT(d)/EWT(m)/EWP(v)/EWP(k)/EWP(h)/EWP(l)
ACC NR: AP6002602 (A) SOURCE CODE: UR/0286/65/000/023/0098/0098

AUTHORS: Bogomolov, S. P.; Klement'yev, V. G.; Estrin, M. I.; Loginov, Ye. A.; Kuz'min, G. I.; Zemzerov, S. N.; Gusev, A. I.; Fedorova, Ye. V.

ORG: none

TITLE: Machine for cutting joints in freshly laid concrete layers. Class 84, No. 176831

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 23, 1965, 98

TOPIC TAGS: concrete, ~~[illegible]~~ construction machinery

ABSTRACT: This Author Certificate presents a machine for cutting joints in freshly laid concrete layers. The machine includes a frame mounted on travelling carriages movable along rails and vibro-knives for cutting longitudinal and transverse joints. To provide for possible cutting of joints in the protective covering of channels and applying film-forming materials on it, the vibro-knife for cutting transverse joints is mounted for possible motion along the frame. Discharge tanks and a gear pump are mounted on the frame and are connected by tubing to distributive nozzles and valves which are controlled by handles and a

Card 1/3

UDC: 626.174.002.5

system of levers (see Fig. 1). To provide for operation on channels with

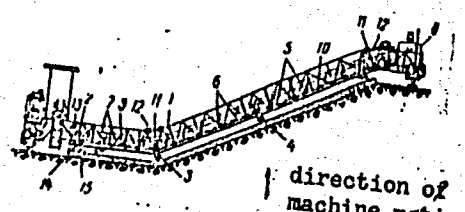

Fig. 1. 1 - frame; 2 - vibro-knife for cutting transverse joints; 3 - vibro-knife for cutting longitudinal joints; 4 - distributive nozzles; 5 - distributive nozzle valves; 6 - system of levers; 7 - discharge tank; 8 - horizontal truss of frame; 9 - inclined truss of frame; 10 - horizontal hinges; 11 - screw devices; 12 - working parts of vibro-knife for cutting transverse joints; 13 - vibro-knife support; 14 - cutting plates; 15 - vibration isolating plate.

differing slopes, the machine frame is made with horizontal and inclined trusses. The inclined truss is hinged to one of the travelling carriages and to the horizontal truss by horizontal hinges and screw devices. To provide for cutting of transverse joints of differing width and to reduce the vibration of the concrete during the joint cutting process, the vibro-knife for cutting transverse

L 23594-66
ACC NR: AP6002602

joints is made with two working parts fastened to a support rotatable around a horizontal hinge. The support is mounted on a movable carriage. Each of the working parts of the vibro-knife consists of interconnected plates. The middle plate is vibration isolating and the outer plates are cutting (which vibrate depending on the direction of motion of the vibro-knife). To provide for precise setting of the machine at the location of the transverse joint, a limit switch is mounted on the machine frame. Orig. art. has: 1 diagram.

SUB CODE: 13/ SUBM DATE: 01Aug64

Card 3/3 BK

ZEMZIN, V.K.

STANYUKOVICH, A.V., kand.tekhn.nauk; ZEMZIN, V.K.

Durable strength of welded joints at high temperatures.
Metalloved i obr. met. no.2:12-18 F '58. (MIRA 11:2)

1.TSentral'nyy nauchno-issledovatel'skiy kotloturbinnyy institut imeni Polzunova.
(Steel--Welding)
(Metals at high temperature--Testing)

ZEMZIN, V. K.

129-2-3/11

AUTHORS: Stanyukovich, A.V. (Cand.Tech.Sc.), Zemzin, V.K. (Cand.Tech. Sc.)

TITLE: Long Duration Strength of Weld Joints at Elevated Temperatures. (Dlitel'naya prochnost' svarnykh soyedineniy pri vysokikh temperaturakh)

PERIODICAL: Metallovedeniye i Obrabotka Metallov, 1958, Nr 2, pp.12-18 (USSR)

ABSTRACT: The aim of the investigation described in this paper was to study the operation of weld joints under conditions of static loading at elevated temperatures, paying attention mainly to long duration strength in the case of simultaneous loading of various zones of the weld joint. The investigations were carried out on pearlitic 12МФ steel (0.13% C; 0.56% Cr; 0.27% Mo; 0.22% V), welded with pearlitic electrodes, using cutoffs of steam piping of 270 mm outer dia and a wall thickness of 32 mm and electrodes of 3 and 4 mm dia; after welding, the specimens were tempered at 740°C for 2 hours. Experiments were also carried out on the austenitic steel, ЭИ405 (0.09% C; 15.5% Cr; 14.4% Ni; 2.2% Mo; 1% Nb), welded with austenitic electrodes КТИ5, and tempered for two hours at 740°C. In addition to the weld joints the specimens of the base material and of metal deposited from

Card 1/4

Long Duration Strength of Weld Joints at Elevated Temperatures.

the same electrodes on equal material were tested. The test conditions and the heat treatment regimes were the same for all the specimens. Fig.1 gives a sketch of the specimens with longitudinal weld joints. Fig.2 gives a diagram of the stress distribution along the length of welded specimens with transverse weld joints. In Fig.3 the long duration (up to 5000 hours) strengths of weld joints are graphed. The mechanical properties of the investigated steels, of the deposited metal and of the weld joints are entered in Table 2 whilst Table 3 gives the long duration strength of the individual tested materials and the welded joints after test durations of 1000, 10 000 and 100 000 hours respectively. The testing technique developed by the authors permits evaluation of the long duration strength of weld joints as a function of their operating conditions. If the main stresses are in the direction transverse to the weld, long duration strength of the joint is determined by the strength of the weakest zones. If the forces act in the direction of the weld axis, the plasticity properties of those components of the weld joint which are stressed simultaneously are of decisive importance. The weld joint of the tested pearlitic

Card 2/4

...point of view
...figures and 3 Slavic references.

Long Duration Strength of Weld Joints at Elevated Temperatures.

ASSOCIATION: TsKTI imeni Polzunova.

AVAILABLE: Library of Congress.

Card 4/4

USSR/Metals - Steel, Welding, Processes Mar 52

"Deformations and Stresses During Welding of
Structural Self-Hardening Steel," V. N. Zemzin,
Cand Tech Sci, Leningrad Polytechnical Inst imeni
M. I. Kalinin

"Avtogen Delo" No 3, pp 5-8

Describes expts to det effect of structural trans-
formations during hardening on welding deforma-
tions and stresses, and dependence of latter upon
thermal conditions of welding process. Structural
transformations decrease residual welding deforma-
tions and cause compression stresses in hardened

212T86

zone instead of tension stresses which occur in
absence of transformations. Preheating steels
during welding leads to more uniform field of
stresses due to their decrease in high annealing
zone and because of lowering stress gradients in
transition from hardened zone to adjacent regions.

212T86

ZEMZIN, V. N.

ZEMZIN, V. N., and ROZENBLYUM, V. I.

Remanent stresses in welded heterogenous discs of austenitic steel with pearlitic. Energomashinostroenie, No 1, p 19, 1956

The remanent stresses are investigated in application to the possible construction of welded rotors. The general laws of distribution of remanent stresses are established for the initial state after welding and after tempering. A calculation is made of the remanent stresses in welded heterogenous discs. It is concluded that the remanent stress distribution is the same before and after tempering. Tempering after welding leads to a new state of stress characterized by the appearance of tensile stresses in the austenitic steel and compressive stresses in the pearlitic with stress discontinuities in the welding zone. The calculations are confirmed by experiment. Cyclic heating tests are necessary to evaluate the suitability for operation of heterogenous welded joints.

Abstract - D 470255

SOV/137-58-11-22605

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 111 (USSR)

AUTHORS: Zemzin, V. N., Yefimov, L. A.

TITLE: Thermal Testing of Welded Joints Consisting of Different Steels (Teplovyye ispytaniya svarnykh soyedineniy raznorodnykh staley)

PERIODICAL: Tr. Leningr. politekhn. in-ta, 1957, Nr 189, pp 83-92

ABSTRACT: The tests were performed on two types of welded models (M) utilizing different metals. The M of a welded disk was composed of an external rim (400 mm in diameter) made of steel EI-405 (12Kh16N13MB) and a central portion made of steel EI-415 (22Kh3MVF). The welding was performed with KTI-15 electrodes (E) (4-5 mm in diameter) after the edges of the central portion were wetted with the E metal. The M of a steam pipe consisted of a central thick-walled pipe (240 x 34 mm in diameter) made of steel EI-257 (12Kh14N14MV2) with two pipes (217 x 21 mm in diameter) made of 15KhM steel attached to it on either side by means of V-groove butt welds; the edges of the 15KhM steel pipes were preliminarily wetted with the E metal of Tsu-2KhM electrodes, the coating of the latter containing an addition of FeV. Welding

Card 1/3

Thermal Testing of Welded Joints Consisting of Different Steels

operations were also performed with KTI-5 electrodes. The welding procedures were as follows: Heating of the disk to a temperature of 600°C over a period of 8-10 min, followed by cooling for 26-28 minutes; the steam pipe M was heated to a temperature of 670° in 10-12 min, the cooling time being 12-14 min. The heating of the models was accomplished by means of a HF generator with a capacity of 60 kva, while cooling was achieved by circulation of water. The disk was subjected to 180 heating-cooling cycles, the model of the steam pipe to 100 and 220 cycles. A simplified calculation of the stresses arising within the austenitic rim demonstrated that their magnitude is approximately four times that of the σ_s value of EI-415 steel. The results of the tests may, therefore, be applied to actual conditions of prolonged service. The nature of the residual stress distribution testifies to the stability of disk dimensions in the process of testing. No disruptions in continuity were observed either in the weld zone or in the parent metal. Steel EI-257 is sensitive to cyclic temperature loading. In the case of the steam-pipe model, cracks and small fissures were observed in areas at some distance from the weld zone. The nature and distribution of these cracks substantiate the assumption that there is no connection between the failures and the dissimilarity of metals employed in the welded connection. The high efficiency of welded connections involving austenitic and pearlitic steels was demonstrated in tests performed

Thermal Testing of Welded Joints Consisting of Different Steels

under more rigid conditions than those encountered in actual operation of power-generating installations. In order to evaluate the possibilities of employing similar weldments on an industrial scale, it is essential that shop tests be carried out on experimental subassemblies under realistic operational conditions.

V. M.

ZEMZIN, V.N.

PHASE I BOOK EXPLOITATION SOV/3944

Smirnova, Ida Davidovna, Engineer, and Viktor Nikolayevich Zemzin, Candidate of Technical Sciences

Svarka khromistykh zharoprochnykh staley (Welding of Heat-Resistant Chromium Steels) Leningrad, 1958. 23 p. (Series: Informatsionno-tekhnicheskiy listok, no. 95-96. Svarka i payka) 6,200 copies printed.

Ed.: Z. M. Ryzhik, Engineer; Tech. Ed.: D. P. Freger.

PURPOSE: This booklet is intended for technical personnel in steel mills.

COVERAGE: The authors discuss the problem of the use of chromium-alloy steels with satisfactory weldability for the manufacture of turbine blades working at elevated temperatures (535° to 580°C). The physical and chemical properties of such chromium-alloy steels and filler metals for welding and surfacing are also discussed. No personalities are mentioned. There are 7 references, all Soviet.

Card 1/2

ZEMZIN, V.N., kand.tekhn.nauk

Use of austenitic steam pipes in power plants in the United States. Energomashinostroenie 4 no.4:41-45 Ap '58. (MIRA 11:7)
(United States--Steam pipes)

SOV/137-59-3-5810

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 3, p 123 (USSR)

AUTHOR: Zemzin, V. N.

TITLE: Certain Aspects of the Strength of Welded Connections in Dissimilar Steels (Voprosy prochnosti svarnykh soyedineniy raznorodnykh staley)

PERIODICAL: V sb.: Prochnost' svarn. konstruktsiy. Moscow-Leningrad, Mashgiz, 1958, pp 42-54

ABSTRACT: The following aspects of welding of austenitic (AS) and pearlitic (PS) steels were examined: Distribution of residual stresses (RS), the strength of the zone of fusion, and the performance of components operating under cyclic temperature variations. The RS's were measured by the method of N. N. Davidenkov by means of removing annular layers of metal from welded disks. Disks with an outside diameter of 250 mm and a thickness of 25 mm were fabricated by welding together two concentric rings, austenitic electrodes of the KTI-5 type being employed in the process. Of the three disks employed, one was made of two rings of AS (EI-405); another consisted of an outer AS ring and an inner ring made of PS; the third disk was composed of an outer ring made of PS and an inner ring of AS. The

Card 1/3

coefficient of linear expansion at temperatures ranging from 20 to 700°C is equal to 18.2×10^{-6} in the case of EI-405 steel and 13.9×10^{-6} in the case of the PS. It was established that in all instances tensile RS's operate in the weld and in regions adjoining it; these RS's become compressive as the edges of the disk are approached; the dissimilarity of the metals employed manifests itself in a certain displacement of the RS peak toward the EI-405 steel. After 2 hours of tempering at a temperature of 650° a sharp drop in RS's, accompanied by a change in their sign, occurs on the boundary between the AS and PS: Tensile RS's reaching a value of σ_s appear in the EI-405 steel while balancing compressive RS's appear in the PS. In the process of heating of disks to their operating temperature, secondary plastic deformations of opposite sign may appear. During tempering, transitional interlayers, resulting from the diffusion of C from low-alloyed to higher-alloyed constituents, may appear in the zone of fusion of dissimilar steels, thereby reducing the efficiency of the welded connections. These interlayers may be avoided if the edges of rings made of the PS 15KhM are surfaced with TsU2KhM electrodes (0.4% V); in this instance, the fracture occurs in the parent metal. The employment of austenitic electrodes (of the Ni-Cr type) with a Ni base is another method of preventing the formation of the transitional interlayers. Tests performed on two models of a butt-welded pipeline (steels EI257 and 12 MKh welded with KTI-5 electrodes) subjected to temperature variations alternating

Certain Aspects of the Strength of Welded Connections in Dissimilar Steels

between room temperature and 600° C demonstrated the following: In the case of untempered EI257 steel, welding cracks appeared at a distance of 70 mm from the weld after 100 cycles. After tempering (at 800° for a period of six hours), however, the specimen did not fail even after 220 cycles. No external stresses were applied in the course of testing.

V. G.

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SOV/137-59-7-15969

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Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 7, pp 123 - 124 (USSR)

AUTHORS: Zemzin, V.N., Petrov, G.L., Smirnova, I.D., Soldatova, A.S., Kakstov, A.A., [redacted]ovich, Kh.I.

TITLE: Welding Cast Austenitic LA3 Steel

PERIODICAL: Tr. Nevsk. mashinostr. z-da, 1958, Nr 4, pp 104 - 118

ABSTRACT: Austenitic Cr-Ni LA3 steel is used in steam equipment production at super-high parameters. Electrodes were designed and technology of welding-up casting defects and welding slide-plates to rolled Cr-Ni-steel pipes was developed. Requirements to heat-resistance of weld joints are the same as to steel for machine part castings: at 580 - 600°C and 100,000 hours operation σ_{dl} was $\geq$ 14 kg/mm^2; and σ_{pl} was $\geq$ 6 kg/mm^2 at an elimination of 1.10^{-5} %/hour and $a_k \geq$ 4 kgm/cm^2. Formation of hot cracks in the seam metal are characteristic of LA3 steel welding. S, Si, Nb, and sometimes P, further hot crack formation by the development of low-melting eutectics. The presence of a second phase, δ -ferrite in the given case, reduces the probability of hot crack formation in the seam metal and granulates the structure. Taking into account the dilution of the seam

Card 1/2

4

Welding Cast Austenitic LA3 Steel

metal by the base metal, the ferrite content in the build-up metal is considered to be 5 to 7%. Increased ferrite amount arranged in continuous "chains" entails σ-phase formation and embrittles the metal in ageing. The seam metal was alloyed with C, Cr, Ni, Mn, Mo and V through the covering. The ferrite amount was controlled by varying the Cr content. The following requirement to the chemical composition of built-up metal (with KTI-5 electrodes) was established (in %): C 0.08 - 0.15; Si 0.40; Mn 2.8 - 4.0; Mo 1.8 - 2.7; V 0.35 - 0.50; S $\leq$ 0.03; P $\leq$ 0.04, for Cr and Ni four variants are given within 9.6 - 13.5 Ni and 17.7 - 21.3 Cr respectively. The electrode wire was made of "EI400" or "Kh18N11M" steel. Mechanical properties and endurance of the built-up metal were satisfactory after ageing for 10 hours at 800°C. From 1952 to 1956 the plant consumed 21 tons of KTI-5 electrodes for welding-up casting defects in 50 - 800 kg ingots, cast of "LA3" steel, and up to 12 tons for "Kh22N12" steel castings.

V.B.

4

PHASE I BOOK EXPLOITATION SOV/4015

Zemzin, Viktor Nikolayevich, Candidate of Technical Sciences, and Ida Davidovna Smirnova, Engineer

Svarnyye soyedineniya raznorodnykh khromistykh i perlitnykh zharoprochnykh staley (Welded Joints of Different Chromium and Pearlitic Heat-Resistant steels) Leningrad, 1959. 23 p. (Series: Leningradskiy dom nauchno-tekhnicheskoy propagandy. Obmen peredovym opytom. Seriya: Svarka i payka metallov, vyp. 4) 6,500 copies printed.

Sponsoring Agencies: Leningradskiy dom nauchno-tekhnicheskoy propagandy; Obshchestvo po rasprostraneniyu politicheskikh i nauchnykh znaniy RSFSR.

Ed.: Z. M. Ryzhik, Engineer; Tech. Ed.: M. M. Kubneva.

PURPOSE: This booklet is intended for welding engineers and skilled welders. It may also be used by students of welding technology.

COVERAGE: The booklet deals with welding of chromium and pearlitic steels. Such welds are often encountered in gas and steam turbines where the blades are frequently made of chromium steel; for less critical components pearlitic

Card 1/2

steel is used. To insure strong and reliable welds under severe operating conditions at elevated temperatures proper electrodes and welding techniques have to be applied. It was found that in welding chromium and pearlitic steels, electrodes of pearlitic structure are superior to chromium-alloy electrodes. Problems of the stability of structure, the fusion zone, and the relative strength of the welds are discussed. No personalities are mentioned. There are 3 references: 2 Soviet and 1 English.

TABLE OF CONTENTS: There is no table of contents; the booklet is divided into the following sections:

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Card 2/2

SOV/135-59-9-3/23

18(5,7)

AUTHORS: Shorshorov, M. Kh., Zemzin, V. N., Candidates of Technical Sciences; Belov, V. V., and Smirnova, I. D., Engineers

TITLE: Research on Weldability of Heat Resistant Steels Containing 12% Chromium

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 9, pp 6-10 (USSR)

ABSTRACT: The authors state that the use of higher working temperatures (565-580°C) with present day steam turbines need heat resistant steels for the more heated parts. Therefore research was done on the weldability of heat resistant steels containing about 12% chromium. Chromium steels without additional alloys (Type 2Kh13, 1Kh13, 08Kh12) and reinforced steels (Type 15Kh11MF, 15Kh11VF, 15Kh11MFB, 15KhVMF, 15Kh12VMF with Ti, Nb and B, 25Kh11M3F) were investigated. The influence of the welding on structure and qualities of the zone near the weld was investigated by the method IMET-1 [Ref 4] under conditions of arc welding with maximum temperatures. T_{max}= 1370 - 1400°C, and cooling speed W_{0kh1} = 0.1 - 600°C/sec

Card 1/3

Research on Weldability of Heat Resistant Steels Containing 12% Chromium

in an interval of 750 - 650°C. The change of the mechanic qualities of chromium steels under the influence of the thermal cycle of welding (Table 2) shows, that in steels without alloying addition the carbon content has a considerable influence. Fig 1 shows the change of the mechanical qualities in the zone near the weld of steels with 12% chromium dependent on the cooling speed in intervals of 750 - 650°C. Research has shown that in steels without reinforcing alloys a lower cooling speed leads to a considerable increase of granulation and a decrease of plasticity. Chromium steels with 12% Cr and with reinforced and alloying addition are less sensitive to a change of the thermal cycle parameter when welding, and they have less tendency to an increased granulation in the zone near the weld. Several results given by E. A. Kheyn, Engineer, were used in this study. There are 8 photographs, 1 drawing, 4 graphs, 4 tables and 6 references, 5 of which are Soviet and 1 German.

SOV/135-59-9-3/23

Research on Weldability of Heat Resistant Steels Containing 12% Chromium

ASSOCIATIONS: Institut metallurgii imeni A. A. Baykova AN SSSR (Institute of Metallurgy imeni A. A. Baykov) (Shorshorov, M. Kh. and Belov, V. V.); Tsentral'nyy nauchno-issledovatel'skiy kotloturbinnyy institut imeni I. I. Polzunova (Central Scientific Research Institute for Boilers and Turbines imeni I. I. Polzunov) (Zemzin, V. N. and Smirnova, I. D.)

Card 3/3

SOV/125-59-3-3/13

18(7)
AUTHOR: Zemzin, V.N., Pivnik, Ye.M., and Yeroshkin, N.A.

TITLE: Resistance of Austenitic Ferrite Steel of Type Kh19N12M2F Built Up by Welding Against the Influence of Heat (Issledovani zharoprochnosti austenitno-ferritnogo naplavlennogo metalla tipa Kh19N12M2F)

PERIODICAL: Avtomaticheskaya svarka, 1959, Vol 12, Nr 3, pp 19-31 (USSR)

ABSTRACT: It was demonstrated that the austenitic ferrite steel of type Kh19N12M2F (Table 1) built up by welding, which has an initial ferrite content of 2-5%, is able to withstand to a satisfactorily high degree the influence of heat - in spite of the fact that a certain factor occurs - which makes it suitable to be employed for stationary machinery operating at temperatures of up to approximately 600°C under which conditions the life to be expected may be of 100,000 hours and more. Table 1 shows the chemical analysis and the ferrite content in percent of the steel types welded up. Photographs 1, 2 and 3 show the micro-

Card 1/2

Resistance of Austenitic Ferrite Steel of Type Kh19N12M2F Built Up by Welding Against the Influence of Heat

sections of the different types of steel with various ferrite content in percent. Table 2 indicates the impact resistance as a function of the ferrite content and the thermic treatment after welding (see also Fig.4). The specimens to be examined are subjected at various temperatures to a process of accelerated wear and are tested for their impact resistance. (Results Fig. 8 and 9). Table 4 summarizes the data on heat resistance for steel of various ferrite content by the method of impact resistance tests carried out after thermic treatment. The author comes to the conclusion that a ferrite content of 5% as a maximum and exposure to temperature of not more than 600°C guarantees practically an unlimited life for the steel. There are 4 tables, 10 diagrams and 11 references, 9 of which are Soviet and 2 English.

ASSOCIATION: ZKTI im I.I. Polzunova

SUBMITTED: October 24, 1958

SOV/32-25-6-25/53

28(5)

AUTHORS: Stanyukovich, A. V., Zemzin, V. N.

TITLE: Method of Evaluating the Durability of Welded Joints (Metody otsenki dlitel'noy prochnosti svarnykh soyedineniy)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 6, pp 715 - 721 (USSR)

ABSTRACT: Durability (D) is one of the most important criteria for evaluating welded joints for continuous duty at high temperatures. Therefore, it is of preeminent importance to devise the most rational method for the (D) determination. (D) was hitherto evaluated by testing cross welded samples (I). Service demands made on many welded structures in power engineering plants (as, for example, welded joints in steam pipings, drum rotors, etc) in which the stress is along the welding seam, do not comply with conditions in the abovementioned tests; therefore, a special method (II) of testing plane samples with longitudinal weldings (Fig 3) was devised at the Institute of the authors of the present paper (see Association)(Ref 2). The fundamental characteristics of both these methods of (D) testing((I) and (II)) are described and results obtained on typical welded

Card 1/2

joints are given. The fundamental rules governing the sample deformation according to (I) may be depicted by a certain scheme (Fig 4), by which it is possible to identify the least resistant component of the welded joint and the melting zone sensitivity as related to the stress concentration. Respective results are given and explained, that were obtained on weldings of weakly alloyed 12MFKh steel, 15Kh11MF chromium steel, EI415 and 15Kh1M1F perlite steels, and EI405 austenite steel (Table 1, Fig 5) as well as EI612K steel, weldings of various 12KhMF + 15Kh11MF and 12MFKh steels (with KTI-5 austenite electrodes or TSh-20 and Tsh-27 perlite electrodes) (Table 1, Fig 6) et alia. Tests (II) allow the determination of the common performance of individual zones of the welded joint; in this connection the applicability of the abovementioned deformation scheme (Fig 4), as well as the decisive role played by the plasticity of the individual welding joint components are confirmed. Respective testing results (Table 2, Fig 7) obtained on the abovementioned steel types and electrodes are given. There are 7 figures, 2 tables, and 6 Soviet references.

ASSOCIATION: Tsentral'nyy kotloturbinnyy institut im.Polzunova (Central Boiler Turbine Institute imeni Polzunov)

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AUTHORS: Shorshorov, M. Kh., Candidate of Technical Sciences, Sedykh, V. S., Engineer, Zemzin, V. N., Candidate of Technical Sciences, Runov, A. Ye., Engineer

TITLE: The Effect of the Ferrite Phase on the Resistance of Austenite Seams to Hot Crack Formation

PERIODICAL: Svarochnoye proizvodstvo, 1960, No. 1, pp. 1-4

TEXT: Electrodes ensuring a 2 to 5% ferrite content in the built-up metal are used for welding heat resistant austenitic steels. A large number of data are now available for regulating the upper limit of the ferrite phase content in the seam and heat treating conditions of weld joints, applied to various operational parameters, types of articles and austenitic steel grades. On the basis of quantitative evaluation methods, experimental results are presented on the effect of the ferrite phase amount on the resistance to hot cracking of metal built up with КТИ-5 (KTI-5), ЦТ-15 (TsT-15), ЗИО-3 (ZIO-3) and ЗИО-7 (ZIO-7) electrodes, and of the seam metal when welding 1Х18Н12Т (1Kh18N12T) steel with these electrodes. Electrodes from TsKTI imeni Polzunov,

Card 1/4

83621

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A006/A001

The Effect of the Ferrite Phase on the Resistance of Austenite Seams to Hot Crack Formation

the welding department of TsNIITMASh and the Podol'skiy mashinostroitel'nyy zavod imeni Ordzhonikidze (Podol'sk Machinebuilding Plant imeni Orzhonikidze) were tested. Table 1 contains the composition of electrodes, Cr and Ni equivalents, the equivalence ratio of these components, and the ferrite phase content in the built-up metal, determined by the magnetic method using the TsNIITMASh ferritometer. For some compositions of the built-up metal the ferrite phase content was established additionally by metallographical analysis. The resistance of the seam metal to hot cracks was evaluated by the magnitude of the critical rate of its linear deformation when elongated during the crystallization process. This was established by tests on the ИМЕТ-2 (IMET-2) and П-3-4 (P-3-4) machines designed by MVTU. The tests were made with butt(IMET method) and T-welds (MVTU method). The following results were obtained: The index of hot crack resistance (critical rate of linear deformation) of austenite-ferrite built-up metal depends on the amount of the ferrite phase and on the nature of its alloy-int. This index increases from 8 to 12 mm/min for weld metal of 1Х19Н12М2Ф (1Kh19N12M2F) composition with a ferrite content increased from 0 to 4 - 5%.

Card 2/4

83621

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A006/A001

The Effect of the Ferrite Phase on the Resistance of Austenite Seams to Hot Crack Formation

A further increase in the ferrite content up to 12% does not affect the proneness to hot cracks. The index of hot crack resistance increases continuously from 3.6 to 11 - 12 mm/min for weld metal of 1X19H9B (1Kh19N9B) composition (TsT-15 and ZIO electrodes) at an increase of the ferrite phase from 0 to 10 - 16%. At a content of the ferrite phase within 0 to 6 - 7%, the index of hot crack resistance of the built-up metal and the seam metal of KTI-4 electrodes is 2 to 1.3 times higher as compared to TsT-15 electrodes when welding 1Kh18N12T steel of a medium grade chemical composition. ZIO electrodes range between both the aforementioned types. A 1:10 ratio of the C and Nb content is recommended to raise the resistance of the built up metal to hot cracks when welding with TsT-15 and ZIO type electrodes. TsT-15 electrodes must ensure a ferrite phase content in the built-up metal not below 5 - 6% and KTI electrodes not below 2 - 3% to obtain resistance to hot cracks when welding root layers of the seam in steel with a higher austenite content (such as 1Kh18N12T steel). The evaluation of hot crack resistance of the seams according to the results of testing butt welds on the IMET-2 machine and T welds on the

Card 3/4

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A006/A001

The Effect of the Ferrite Phase on the Resistance of Austenite Seams to Hot Crack Formation

P-4-3 machine yields similar results. It is concluded that in estimating the advantages and selecting the electrode type it is necessary to consider, besides the index of hot crack resistance of the built-up metal, its operational properties depending on temperature, stress, the corrosion medium, the duration of operation, the type of alloying and the composition of the base metal to be welded. The authors thank Professor K. V. Lyubavskiy, Doctor of Technical Sciences, for his assistance in the work performed. There are 3 figures, 3 tables, and 8 Soviet references.

ASSOCIATIONS: Institut metallurgii im. A. A. Baykova AN SSSR (Institute of Metallurgy imeni A. A. Baykov, AS USSR) Shorshorov and Sedykh; TsKTI imeni I. I. Polzunov (Zemzin); TsNIITMASh (Runov)

Card 4/4

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S/125/60/000/03/005/018
D042/D001

25(1)

AUTHORS: Zemzin, V.N., Pivnik, Ye.M., Yeroshkin, N.A.

TITLE: The Heat Resistance of Austenito-Ferrite Weld Metal

PERIODICAL: Avtomaticheskaya svarka, 1960, Nr 3, pp 37-45

ABSTRACT: Results of an investigation are given, in which the effect of different types of heat treatment including long-time ageing on the impact resistance and durability of weld metal was determined. The data include the composition of the electrodes and the weld metal obtained (Table 1): "KTI-5" ("1Kh19N12M2F") alloying the weld with molybdenum and vanadium; "TsT-15" ("1Kh19N9B") adding niobium; "KTI-12" ("2Kh19N9MB") adding molybdenum and niobium. The "KTI-5" and "TsT-15" are used for welding austenite steel in power engineering [Ref 1-4] and the "KTI-12" electrodes, recently developed at TsKTI, produce weld metal with higher heat-resistance and sufficiently stable properties when the content of ferrite phase is in the range between 0 and 9%. The composition of the electrodes and weld metal was given in %: "KTI-5" - 0.06-0.14 C, 0.24-0.48 Si,

Card 1/4

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D042/D001

The Heat Resistance of Austenito-Ferrite Weld Metal

2.85-4.87 Mn, 1658-22.7 Cr, 10.5-12.5 Ni, 1.85-2.49 Mo, 0.3-0.6 V, 0.08 S and 0.02 P, ferrite content 0-9; "TsT-15" - 0.08 C, 0.3 Si, 2.1 Mn, 19-5-20.4 Cr, 9.7 Ni, 0.93 Nb, 0.007 S and 0.011P, ferrite content 3-7; "KTI-12" - 0.10-0.19 C, 0.65 Si, 2.8 Mn, 17.2-21.3 Cr, 9.2-10.3 Ni, 0.9-1.2 Mo, 0.65-1.0 Nb, 0.01 S and 0.015 P, ferrite content 0-12. The following conclusions were made: 1) Austenito-ferrite (up to 5% of α) weld metal of the "KTI-5" and "TsT-15" electrodes had sufficiently stable properties under working conditions for 100,000 hours in 600° C. "KTI-12" electrode weld metal with molybdenum and niobium with up to 9% of α phase may be used in work temperatures up to 650° C. In case austenization is employed after welding, the "TsK-15" electrode weld metal may also work in 650°; 2) In the process of long-time ageing in working temperatures, the structure changes, i.e. th α -phase decomposes and the formation of dispersed σ and

Card 2/4

S/125/60/000/03/005/018
D042/D001

The Heat Resistance of Austenito-Ferrite Weld Metal

$Me_{23}C_6$ takes place, and σ also forms after a longer period of time. The intermediary dispersed phases are sufficiently stable. 3) Under conditions of long-time ageing in 600-650°, the initial and the stabilized state of weld metal are equivalent; 4) Austenization after welding markedly raises the stability of properties during the ageing of metal welded by the "TsT-15" electrodes; 5) The approximate durability limits in 10^5 hours, determined by direct extrapolation of test results (Table, p 45), was between 12.5 and 18.0 kg/mm^2 in 600 and 650° C; 6) The sigma formation in "KTI-5" weld metal in ageing did not impair the durability and maintained high plasticity when ruptured. There are 5 tables, 4 graphs, 2 sets of photographs and 9 Soviet references.

ASSOCIATION: Tsentral'nyy kotloturbinnyy institut im. Polsunova, "TsKTP" (Central Boiler and Turbine Institute imeni Polzunov)

Card 3/4

S/125/60/000/03/005/018
D042/D001

The Heat Resistance of Austenito-Ferrite Weld Metal

SUBMITTED: July 13, 1959

Card 4/4

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S/135/61/000/007/001/012
A006/A106

AUTHOR: Zemzin, V. N., Candidate of Technical Sciences

TITLE: Endurance strength of joints of austenite steel welded with perlite and chrome steels

PERIODICAL: Svarochnoye proizvodstvo, no. 7, 1961, 1-6

TEXT: Weld joints of dissimilar steels, such as austenite with perlite and chromium steel, are heterogeneous due to the different properties of their components. In the fusion zone of perlite steel with the austenite weld an intermediate layer with sharply dissimilar properties may be formed, depending on the fusion conditions of the different metals, or the diffustion of carbon at high temperatures (Refs. 1-4: V. N. Zemzin, Fusion zones of weld joints of dissimilar steels "Kotlotrubostroyeniye no. 6, 1950; Bruk, B. I., Yur'yev, S. F., Redistribution of carbon on the boundary surface of heterogeneous microvolumes of steel during tempering, DAN, v. 104, no. 4, 1955; Makara, A. N., Rossoshinskiy, A. A., On the chemical heterogeneity at the fusion zone, "Avtomaticheskaya svarka", no.6, 1956; Livshits, L. S., On the fusion zone of austenite and perlite steel "Svarochnoye proizvodstvo", no. 5, 1955). A basic characteristic determining the

Card 1/4

Endurance strength of joints ...

performance of weld joints at high temperatures, is their endurance strength. Endurance tests make it possible to evaluate the behavior of weld joints during creep processes and to reveal their weak areas. The author evaluated the endurance strength of joints of austenite steel welded to perlite and chromium steel depending on the combination of steels to be welded, the electrode type, the intensity of developing of intermediate layers in the fusion zone and the temperature of the tests. The tests were made on ИП-4М (IP-4M) and ЦКТИ-2 (TsKTI-2) machines with specimens of 8 - 10 mm in diameter with transverse weld joints. Grade 12ХМФ (12KhMF), 15Х1М1Ф (15Kh1M1F), 25Х3МВФ (25Kh3MVF), (ЭИ 415) (EI415), 1Х13 (1Kh13) and 15Х12ВМФ (15Kh12VMF), (ЭИ 802) (EI802) formed the perlite (chromium) component of the welds, and 1Х15Н35В3Т (1Kh15N35V3T), (ЭИ 612) (EI612) and the Х15Н80БЮТ (Kh15N80BYuT), (ЭИ 607А) (EI607A) the austenite components. Iron base electrodes Х15Н25М6 (Kh15N25M6) [ЦТ-10 (TsT-10), НИАТ-5 (NIAT-5) etc], and nickel base electrodes type Х15Н60М7 (Kh15N60M7), (КТИ-13) (KTI-13) and Х15Н70В2 (Kh15N70B2) were employed. Preliminary tests had shown that the results obtained did not depend on the presence of the austenite component, but were determined by the properties of the perlite (chrome) steel or its fusion zone with the austenitic weld. Therefore perlite or chromium welds with austenite joints were investigated. Heat treatment of the welds consisted in tempering

Endurance strength of joints ...

at 680-740°C. To reveal the effect of intermediate layers in the fusion zone on endurance strength, 12KhMF steel joints were tested in different thermal state at 500, 550 and 600°C. To determine the effect of the type of austenite joint on the performance of heterogeneous joints during cyclic-alternating temperatures, endurance tests were carried out with 12 MF steel specimens by varying the temperature at the following cycle: 1) heating to 580°C, 1 hour; 2) holding for 6 hours; 3) cooling to 50°C, 1 hour. The experiments were performed with the participation of senior technician Ye. A. Chekhover. The investigation yielded the following results: Endurance strength of heterogeneous welds of austenite steel with perlite (chrome) steel, shows only little difference from that of homogeneous weld joints of perlite (chrome) steel. The presence of developed intermediate layers of a diffusional nature in the fusion zone reduces by 10 - 20% the endurance strength of heterogeneous weld joints. Such joints, operating for an extended period of time at temperatures above 500°C, are prone to low-ductility failure in the fusion zone. The probability of such failure increases with higher temperatures intensified formation of intermediate layers in the fusion zone, and depends on the thermal state of the perlite steel to be welded. The use of steels treated to high strength (in low tempering state) raises the possibility of brittle failure in the fusion zone. When tested at

Endurance strength of joints ...

constant temperatures the type of the austenite joint (on iron or nickel base) does not affect the nature of failure of heterogeneous welds. Tests at temperatures changing at a given cycle, show the advantage of using nickel base austenite electrodes to produce welds which will be subjected to a great number of heating-cooling cycles during their operation. There are 2 tables, 7 figures and 10 references: 9 Soviet-bloc and 1 non-Soviet-bloc. The most recent English-language reference is Tucker and Ebely, Investigation of weld joints of austenite steels with perlite steels employed under operational conditions of steam power plant parts, "Welding Journal", no. 11, 1956.

ASSOCIATION: TsKTI im. I. I. Polzunova

Card 4/4

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22949
S/125/61/000/007/005/013
D040/D112

AUTHORS: Zemzin, V.N., and Stanyukovich, A.V.

TITLE: Tendency of welded joints in austenitic steel to local failures at the seam at high temperatures

PERIODICAL: Avtomaticheskaya svarka, no. 7, 1961, 46-53

TEXT: A new method for evaluating the tendency of austenitic-steel welded joints to local failures at the seam at high temperatures is described. The method was chosen after previous investigations for the reason that conventional mechanical strength tests do not reliably reveal the dangerous tendency of the welded structures of power equipment (particularly austenitic steam pipelines) to cracking when they are subjected to high temperatures for long periods. The test consists in bending with a constant deformation rate at high temperature. Cylindrical specimens were cut from joints with welds of at least 30 mm, and installed in a special reverser in ЦИМ-5 (TsIM-5) test machines designed by N.D. Zaytsev (Ref. 5: A.V. Stanyukovich and N.D. Zaytsev, "Zavodskaya laboratoriya", no. 9, 1959). The plasticity of the metal was evaluated according to the elongation of the external fibers in the middle of the specimen at the moment of crack appearance. Experiments were

Card 1/3

Tendency of welded joints...

were conducted at 500-800°C with deformation rates of 20, 0.60 and 0.067% per hour. Cracks formed mostly along the grain boundaries in the base metal, at a distance of one or two grains from the fusion line; the character of the cracks was exactly the same as in the case of welds in austenitic steel steam pipelines. The cracking tendency varied widely according to the grade of steel and the state of the joints (i.e. according to whether they had been welded or subjected to heat treatment). For 1Kh18N9T (1Kh18N9T) steel the most dangerous temperature range appeared to be 500-700°C; similar cracks formed in EI405 (EI405), EI257 (EI257) and EI612 (EI612) steels, but at different temperatures and after varying degrees of elongation of the outer fibers before the cracking. The apparent cause of cracks are onsets of failures on the grain boundaries of the metal at the seam affected by the welding heat. Most of the tested joints lost their deformation capacity when the test temperature was raised, but already after 700-750°C the plasticity increased again in most joints. An abrupt drop of the intercrystalline bond at the seam upon heating during the welding had been stated in other investigations, too. The observed beneficial effect of austenization may be due to the disappearance of submicroscopic defects and redistribution of the intergrain layers or impurities on the grain boundaries. But austenization

Tendency of welded joints...

can only have a positive effect in the case of very fine grain boundary defects. It was evident that steel containing molybdenum (EI405) was more resistant to cracking at 600-700°C than other steel grades. This may be explained by the capacity of Mo to accumulate on the grain boundaries; this inhibits diffusion processes. The observed positive effect of Mo makes it possible to suppose that other elements with the same capacity of segregation on grain boundaries might reduce the crack danger. It seems that tungsten and titanium do not improve crack resistance. Heat treatment in 1Kh18N9T steel joints has a marked effect - austenization considerably decreases the tendency to local failures in the absence of high stresses, but stabilization has a negative effect. The test results are illustrated in graphs. There are 5 figures and 7 Soviet-bloc references.

ASSOCIATION: TsKTI im. I.I. Polzunova (TsKTI im. I.I. Polzunov)

SUBMITTED: December 7, 1960

Card 3/3

SOV/6169

PHASE I BOOK EXPLOITATION

Zemzin, Viktor Nikolayevich, and Leonid Davydovich Frenkel'

Svarnyye konstruktsii parovykh i gazovykh turbin (Welded Structures in Steam and Gas Turbines). Moscow, Mashgiz, 1962. 222 p. 3000 copies printed.

Ed. (Title page): N. O. Okerblom, Doctor of Technical Sciences, Professor; Reviewer: S. N. Antonov, Engineer; Ed. of Publishing House: Ye. G. Bocharova; Tech. Ed.: L. V. Shchetinina; Managing Ed. for Literature on the Design and Operation of Machines (Leningrad Department, Mashgiz): F. I. Fetisov, Engineer.

PURPOSE: This book is intended for designers and process engineers at turbine manufacturing plants, and also for workers at scientific research institutes engaged in the study of welded joints and the manufacture of welded structures for turbines. It may also be useful to students at technical schools specializing in welding and power-equipment manufacture.

Card 1/11

Welded Structures in Steam and Gas Turbines SOV/6169

COVERAGE: The book reviews basic principles for selecting materials and for designing and producing welded subassemblies for turbines. Typical welded structures for turbines are reviewed in detail, and suggestions are made on the selection of the most suitable welded structures from the standpoint of their fabricability. The third section of Chapter III was written by V. I. Rozenblyum. There are 125 references, mostly Soviet.

TABLE OF CONTENTS:

Card 2/7

ZEMZIN, V.N., kand.tekhn.nauk; SMIRNOVA, I.D., inzh.; GONSEROVSKIY, F.G., inzh.; BIRYUKOV, V.M., inzh.

Welding high-chromium heat-resistant steel for steam turbine parts. Trudy LMZ no.9:159-174 '62. (MIRA 16:6)
(Steel, Heat-resistant--Welding)
(Steam turbines--Design and construction)

ZEMZIN V. N.

PHASE I BOOK EXPLOITATION SOV/6435

Petrov, Georgiy L'vovich, Viktor Nikolayevich Zemzin, and Fedor Grigor'yevich Gonserovskiy

Svarka zharoprochnykh nerzhaveyushchikh staley (Welding of Heat-Resistant Stainless Steels) Moscow, Mashgiz, 1963. 247 p. Errata slip inserted. 5500 copies printed.

Reviewer: I. A. Zaks, Engineer; Ed.: B. I. Bruk, Candidate of Technical Sciences; Ed. of Publishing House: G. N. Kurepina; Tech. Ed.: A. A. Bardina; Managing Ed. for Literature on Machine-Building Technology, Leningrad Department, Mashgiz: Ye. P. Naumov, Engineer.

PURPOSE: This book is intended for engineering personnel of plants, design bureaus, and scientific research establishments concerned with the manufacture and design of welded structures made from heat-resistant steels and alloys.

Card 1/3

COVERAGE: The book reviews problems connected with welding of high-alloy heat-resistant chromium and chromium-nickel steels and some heat-resistant nickel alloys, and problems of welding these materials to low-alloy steels used in structures which operate at high temperatures. The introduction and chapters I, III, and IV were written by G. L. Petrov, chapters II and V by V. N. Zemzin and chapter VI by F. G. Gonserovskiy. No personalities are mentioned. Most of the 192 references are Soviet.

TABLE OF CONTENTS

COVERAGE: The book reviews problems connected with welding of high-alloy heat-resistant chromium and chromium-nickel steels and some heat-resistant nickel alloys, and problems of welding these materials to low-alloy steels used in structures which operate at high temperatures. The introduction and chapters I, III, and IV were written by G. L. Petrov, chapters II and V by V. N. Zemzin and chapter VI by F. G. Gonserovskiy. No personalities are mentioned. Most of the 192 references are Soviet.

TABLE OF CONTENTS

IEVIN, Ye.Ye., kand.tekhn.nauk; ZEMZIN, V.N., kand.tekhn.nauk; MASALEVA, Ye.N., inzh.; SNITKO, M.N., inzh.; BABAYEVA, Ye.V., inzh.; SOLDATOVA, A.S., inzh.

Economically alloyed EI402M-L cast steel for turbines and equipment operating with metal temperatures up to 650°C. Energomashinostroenie 9 no.1:30-33 Ja '63. (MIRA 16:3)
(Steel) (Gas turbines)

Card 1/3

STANYUKOVICH, A.V.; ZEMZIN, V.N.

Exposure of the tendency to brittle failure in welded joints of austenite steels at high temperature. Zav.lab. 28 no.3:338-344 '62. (MIRA 15:4)

1. TSentral'nyy kotloturbinnyy institut imeni I.I.Polzunova.
(Steel—Testing) (Deformations (Mechanics))

AUTHOR: Zemzin, V. N.; Boyeva, A. V.; Bagramova, T. I. 39 B

ORG: Central Boiler and Turbine Institute im. T. I. Polzunov (Tsentrol'nyy kotlo-turbinnyy institut)

TITLE: Susceptibility of austenitic steel welds to brittle failure at high temperature 18 18 18

SOURCE: Avtomaticheskaya svarka, no. 5, 1966, 1-5

TOPIC TAGS: steel, austenitic steel, steel welding, weld, weld brittle failure/ Kh18N12T steel, Kh18N9 steel, Kh16N9M2 steel

ABSTRACT: The susceptibility to brittle failure of welded joints of Kh18N12T, Kh18N9 and Kh16N9M2 austenitic steels has been investigated. Specimens cut either from pipes with 27—37 mm thick walls or forgings 30—50 mm thick were subjected to bend tests at 500—800 C at a constant deformation rate (the TsKTI method). Welded joints of Kh18N12T steel were found to be susceptible to brittle failure. The melting method, type of welding electrode, or preheating have no significant effect on the susceptibility to brittle failure. Welded joints of Kh18N9 steel were found to be less susceptible to brittle failure than those of Kh18N12T, especially when the carbon content was low and the steel contained no titanium. The highest resistance to brittle failure in the weld-adjacent zone was observed in Kh16N9M2 steel containing

Card 1/2 UDC: 621.791.019

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ACC NR: AP6015238

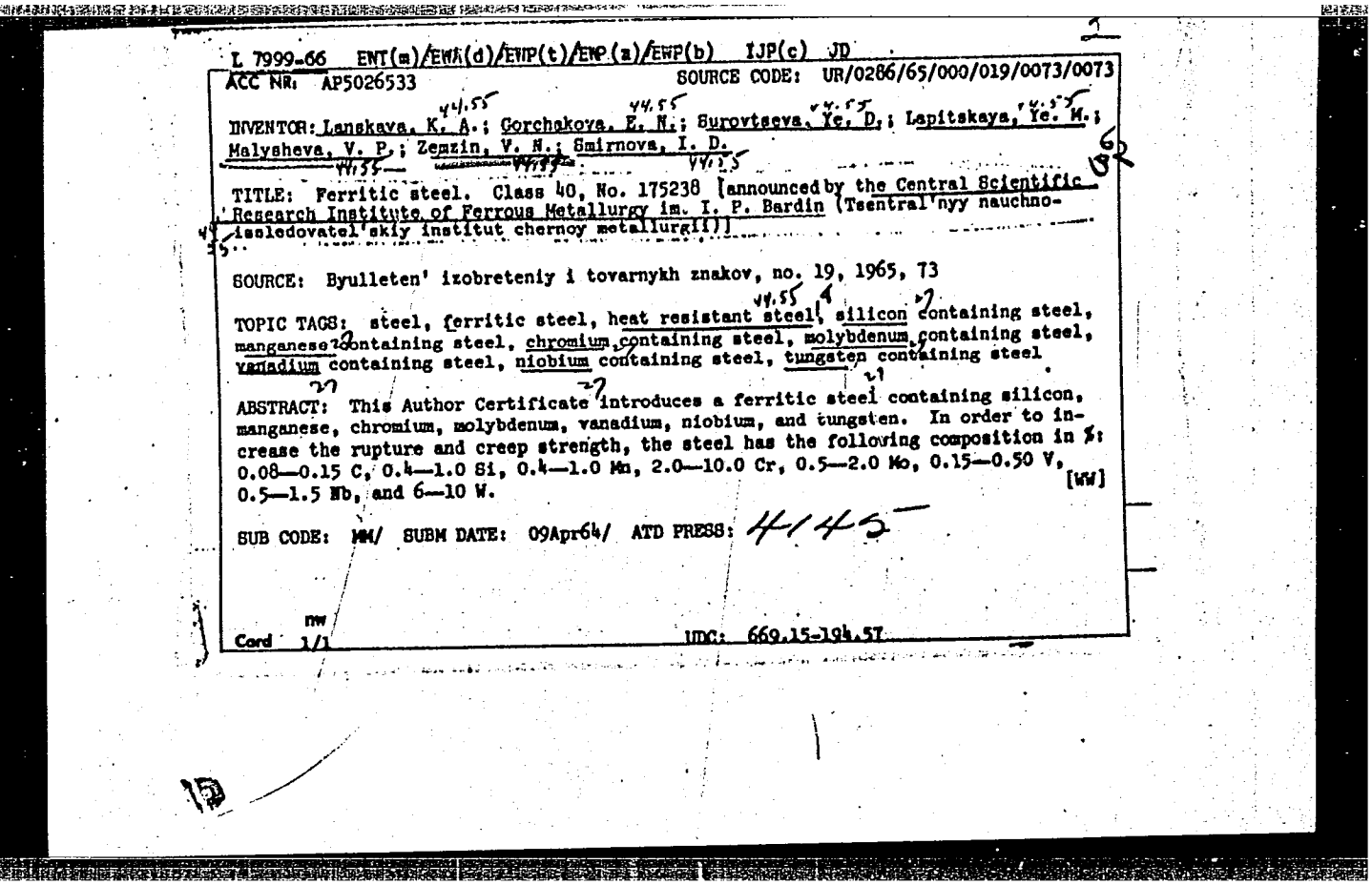
2% Mo. In all tested steels the probability of brittle failure diminishes when the weld strength is lower than that of the base metal. Austenitizing 1Kh18N12T and Kh18N9 steel welds had a beneficial effect on the weld ductility. Lowering the α-phase content in a forged steel does not improve their resistance to brittle failure. Preheating up to 300 C, prior to welding and strain hardening of edges, has little or no effect on the susceptibility of steel to brittle failure. Orig. art. has: 8 figures. [ND]

SUB CODE: 13, 11/ SUBM DATE: 29Oct64/ ORIG REF: 007/ OTH REF: 001/ ATD PRESS: 4259

Card 2/2

ZEMZIN, V.N., kand. tekhn. nauk

Residual stresses in welded joints of dissimilar steels. [Trudy]LMZ no.11:261-287 '64. (MIRA 17:12)



L 7999-66 EWT(m)/EWA(d)/EWP(t)/ETC(m)/EWP(b) IJP(c) JD

ACC NR: AP5026533 SOURCE CODE: UR/0286/65/000/019/0073/0073

INVENTOR: Lanskaya, K. A.; Gorchakova, E. N.; Surovtseva, Ye. D.; Lapitskaya, Ye. M.; Malysheva, V. P.; Zemzin, V. N.; Smirnova, I. D.

TITLE: Ferritic steel. Class 40, No. 175238 [announced by the Central Scientific Research Institute of Ferrous Metallurgy im. I. P. Bardin (Tsentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 19, 1965, 73

TOPIC TAGS: steel, ferritic steel, heat resistant steel, silicon containing steel, manganese containing steel, chromium containing steel, molybdenum containing steel, vanadium containing steel, niobium containing steel, tungsten containing steel

ABSTRACT: This Author Certificate introduces a ferritic steel containing silicon, manganese, chromium, molybdenum, vanadium, niobium, and tungsten. In order to increase the rupture and creep strength, the steel has the following composition in %: 0.08—0.15 C, 0.4—1.0 Si, 0.4—1.0 Mn, 2.0—10.0 Cr, 0.5—2.0 Mo, 0.15—0.50 V, 0.5—1.5 Nb, and 6—10 W. [WW]

SUB CODE: MM/ SUBM DATE: 09Apr64/ ATD PRESS: 4145

Card 1/1 UDC: 669.15-194.57